

REMARKS

The last Office Action in the above-identified application and the references cited by the Examiner have been carefully considered. The specification and claims have been amended in a sincere effort to define more clearly and more specifically features of Applicant's invention which distinguish over the art of record.

Claims 1-9 have been rejected under 35 U.S.C. 112 as being indefinite. The Examiner contends that the term "large" used in Claim 1 is a relative term, which renders the claim indefinite.

In accordance with the Examiner's comments in this regard, independent Claims 1 and 6 have now been amended to eliminate this language and to more specifically define features of Applicant's invention. It is respectfully urged that the changes to Claims 1 and 6 place Claims 1 and 6 in proper form and obviate the rejection of Claims 1-9 by the Examiner on formal grounds.

Applicant notes and gratefully appreciates that the arguments which Applicant submitted in the previous Reply to Office Action were found to be persuasive by the Examiner, and as a result, the Examiner's previous rejection of Claims 1-9 as being anticipated by and obvious in view of the references she previously cited has been withdrawn. Nevertheless, the Examiner cites a new reference which she combined with her previously cited references in again rejecting the pending claims.

More specifically, Claims 1, 4-6 and 9 have been rejected under 35 U.S.C. 103(a) as being obvious in view of European Patent Application Publication No. EP 0 909 084 (Takashi, et al.), which was cited previously, and the article "NTFS vs. FAT: Which is Right for You?", authored by Charlie Russel (Russel).

Furthermore, Claims 2, 3, 7 and 8 have been rejected under 35 U.S.C. 103(a) as being obvious in view of Takashi, et al. European published application, the Russel article and U.S.

Patent No. 5,717,496 (Satoh, et al.), which was also cited previously by the Examiner.

With respect to Claim 1, the Examiner contends that the Takashi, et al. European application discloses an image recording apparatus, that is, a digital camera, with recording capability, and the Examiner refers to the abstract of the Takashi, et al. application for disclosing this. The Examiner further contends that the digital camera disclosed in the Takashi, et al. reference records image data on a memory card 46 in which a recording area is divided into a plurality of unit areas (i.e., "clusters"), and the available unit areas can be dispersedly distributed, that is, stored in a "sporadic fashion". The Examiner kindly refers to paragraph [0003] of the Takashi, et al. reference for disclosing this feature. The Examiner further contends that the Takashi, et al. reference discloses a CPU 28 for formatting the recording medium, and refers to paragraph [0044] of the Takashi, et al. reference for disclosing CPU 28, and further discloses the use of a FAT file system, as shown in Figures 2-4 of the Takashi, et al. published European application. The Examiner acknowledges that the Takashi, et al. reference does not teach that the CPU 28 is a "detecting means" for detecting a capacity of the recording medium, and a "setting means" for setting the unit areas to a larger size as the capacity detected by the detecting means is large. In this regard, Applicant believes that the Examiner is referring to the "means plus function" language found in the originally filed claims, which language was deleted in the Reply to Office Action which Applicant filed on June 21, 2007.

However, the Examiner cites another reference, the Russel article, and she contends that this article discloses that in a FAT file system, as the recording medium gets larger, "the size of each cluster has to get larger", since there is a fixed number of clusters in each partition, and the Examiner refers to page 1, the second paragraph, of the Russel article for disclosing this.

From this, the Examiner concludes that it would have been obvious from the combination of the Takashi, et al. European application and the Russel article to one of ordinary skill in the art to have a detector for detecting a capacity of the recording medium, and a setter for setting the unit areas to a larger size as the capacity detected by the detector is large in order to allocate

memory space for files using a FAT file system.

With respect to Claim 4, the Examiner, again, acknowledges that the Takashi, et al. European application does not disclose that the image data is motion image data, nor does the Takashi, et al. European application disclose that the "setting means" sets the size of the unit area in consideration of a bit rate of the motion image data. However, the Examiner contends that digital cameras that record motion image data are well known in the art and, therefore, it would have been inherent to set the unit area taking into consideration the bit rate of the motion image data.

With respect to Claims 5 and 6, the Examiner contends that these claims are obvious in view of the Takashi, et al. European application and the Russel article for the same reasons she submitted with respect to Claim 1.

As to Claim 9, the Examiner merely states that the Takashi, et al. European application discloses a digital camera provided with an image recording apparatus.

With respect to dependent Claim 2, the Examiner acknowledges that neither the Takashi, et al. European application nor the Russel article teaches a "specifying means" (again, such language was changed to a "specifier" in the Reply dated June 21, 2007) for specifying a recordable number of frames of the recording medium on the basis of the capacity detected by the detecting means, and where the setting means sets the size of the unit area on the basis of the recordable number of frames. However, the Examiner contends that the Satoh, et al. patent discloses such structure. The Examiner kindly refers to column 44, lines 15-22 of the Satoh, et al. patent for disclosing a means for identifying the number of frames given the capacity of the memory card, and to column 44, lines 48-52, where the Examiner contends that the number of frames that can be recorded can be retrieved by the user. Furthermore, the Examiner contends that column 44, lines 31-33 of the Satoh, et al. patent discloses that the user can select the image file size, contending all of this suggesting the use of a setting means for setting the size of the

unit area to conform to the selected file size.

With respect to Claim 3, the Examiner contends that the Satoh, et al. patent discloses, at column 44, lines 31-33, that the image data is compressed image data compressed by rendering a predetermined size a target, that is, the image data is compressed according to a user file size selection, and from this, it would have been inherent to identify the number of frames given the capacity of the memory card and a fixed-size for the still image files.

With respect to dependent Claims 7 and 8, the Examiner merely states that the combination of the Takashi, et al. European application and the Satoh, et al. patent suggests a digital camera provided with the image recording apparatus.

Applicant has carefully reviewed the references cited by the Examiner, and respectfully urges that the combination of the references does not teach or suggest the claimed invention.

Applicant respectfully refers the Examiner to the specification of the subject application, at page 11, line 13 through page 12, line 4. This section relates to the first embodiment of the invention shown in the flow chart of Figure 2.

The capacity of the recording medium 38 is determined and formatted in the cluster size based on the calculated recordable number of frames. If the recordable number of frames is equal to or more than a first threshold value (please see Figure 2), considering the writing speed of the file as being most important and dominating the decision as to what cluster size should be selected, then the cluster size is determined to be a first size (which is relatively large). Thus, if the recordable number of frames is equal to or more than the first threshold value, for example, 100 frames, the reduction in the efficiency in the use of the recording medium 34 is not a problem, since there is plenty of capacity on the recording medium 38 for recording a relatively large number of frames.

Now, if the recordable number of frames is determined to be in the intermediate or mid-

range, then the writing speed of the file as well as the efficiency in the use of the recording medium must be considered. For example, if the recordable number of frames is less than the first threshold value (say, for example, 100 frames), but equal to or more than a second threshold value (for example, 50 frames), then the cluster size is determined to be a second size, which in the example given in the specification is one half the size of the relatively large cluster size selected when there is plenty of recordable capacity on the recording medium 38.

However, if the recordable number of frames is determined to be less than the second threshold value, meaning that there is relatively little capacity on the recording medium 38, then the efficiency in the use of the recording medium 38 is very important and takes precedence over the writing speed. Under these circumstances, the cluster size is determined to be a third size, which is relatively small (in the example given on page 12 of the application, it is one half the size of the cluster size chosen when the recordable number of frames is in the intermediate or mid-range).

In summary, as the recordable number of frames is great, the cluster size is determined to be a large value, while as the recordable number of frames is small, the cluster size is determined to be a small value. All of this has to do with a determination of what rule should take precedence. The efficiency in the use of the recording medium 38 is not a problem if there is plenty of capacity on the recording medium 38, and therefore, the cluster size may be chosen for efficiency in the writing speed. However, if there is little space on the recording medium 38, then the efficiency in the use of the recording medium 38 takes precedence over the writing speed, and the number of clusters is reduced to make the use of the recording medium 38 more efficient, even if this slows down the writing speed.

What is described above relates to the first embodiment of the invention shown in Figure 2. Figure 4 illustrates a flow chart in accordance with a second embodiment of the invention, for moving images comprising a series of still images. Here, the capacity of the recording medium 38 is determined, and from this, the recordable number of frames making up the moving image is

calculated and compared to a first threshold ("ABOVE 100?") and to a second threshold (ABOVE 50?"), as is done in the first embodiment of the invention shown in Figure 2. The cluster size may be adjusted differently for moving images than for still images, but the concept is the same for both still and moving images.

In the third embodiment of the present invention, and as illustrated by the flow chart shown in Figure 6, the capacity of the recording medium 38 is determined, and this capacity is compared to a first recording memory capacity size threshold ("ABOVE 64 MBYTES?") and to a second recording memory capacity size threshold ("ABOVE 32 MBYTES?"), rather than determining the recordable number of frames which is done with the first and second embodiments. Based on a comparison of these two thresholds, the cluster size is determined. All of this is to shorten the time required to record while at the same time preventing the efficiency in the use of the recording medium from being reduced.

It is respectfully urged that this methodology, and the reasons for this methodology, and the structure described in the application and claimed which brings about this methodology, are not disclosed in any of the references cited by the Examiner.

The Russel article makes the following statement which apparently is relied on by the Examiner: "The biggest problem of FAT16 is that it has a fixed maximum number of clusters per partition, so as hard disks get bigger and bigger, the size of each cluster has to get larger." This is stated on the first page of the Russel article under the heading "FAT16". Applicant respectfully submits that, what Mr. Russel is saying here is that, where hard disks with greater and greater capacities are used, they will always be divided by the same maximum amount with FAT16. The Russel article does not disclose detecting the capacity of the recording medium, and adjusting the cluster size based on what the capacity is, as defined by the pending claims. The Russel article does not teach comparing the recordable number of frames, based on the capacity of the recording medium, and comparing the recordable number of frames with either a first threshold value or a second threshold value, and then adjusting the cluster size according to these

comparisons, as is now more specifically set forth in the claims. There is no detection, no comparison and no decision as to what the cluster size should be disclosed in the Russel article, in order to "shorten a time required to record and prevent efficiency in the use of a recording medium from being reduced at the same time", as stated on page 2, lines 2 and 3 of the specification of the subject application, under the heading "SUMMARY OF THE INVENTION".

The Examiner kindly acknowledged that the Takashi, et al. European patent application does not teach or suggest either a detecting means for detecting a capacity of the recording medium, or a setting means for setting the unit areas to a larger size as the capacity detected by the detecting means is large. Even more specifically, the Takashi, et al. European application does not teach or suggest the comparison of either the capacity of the recording medium or the recordable number of frames to a first threshold, or for that matter, a second threshold, and from this comparison, determining and adjusting the cluster size accordingly, as defined by the claims submitted herewith.

The Satoh, et al. patent also does not teach or suggest Applicant's claimed methodology or Applicant's claimed structure which brings about this methodology. The passages quoted by the Examiner in the Satoh, et al. patent, at column 44, lines 17-22 and lines 31-33 merely state that if the image file size is constant, the file size may suitably be varied using a switch. The Satoh, et al. patent states, essentially, that the file size may be fixed or adjusted so that the number of image data frames capable of recording in a medium may be determined even if the size of the image data body is not constant. This does not mean, nor does it suggest, the methodology of the claimed invention, in that the capacity of the recording medium is determined, and either the capacity of the recording medium, or the recordable number of frames based on that capacity, is compared with either a first threshold or a second threshold, or both, and from this comparison, the cluster size is adjusted accordingly to shorten the time required to record while at the same time preventing the efficiency in the use of the recording medium from

being reduced, as taught by the subject application.

As such, Applicant earnestly believes that his invention, as disclosed in the specification and now more specifically set forth in the claims, differs considerably from the disclosures in the Takashi, et al. European patent application, the Russel article and the Satoh, et al. patent.

Before Applicant discusses his amendments to the claims and the new claims which Applicant submits herewith for the Examiner's kind consideration, Applicant would like to discuss the amendments he made to the specification.

Applicant has carefully reviewed the specification of his filed application, and has found a number of grammatical and typographical errors which occurred as a result of the English translation of the corresponding Japanese application on which the U.S. application is based. Applicant has amended the specification to correct these errors. Also, Applicant has amended the specification to clarify that the capacity of the recording medium or the recordable number of frames is compared to the first and second thresholds and is determined to be 1) less than, 2) less than or equal to (i.e., at least equal to), 3) greater than, or 4) greater than or equal to (i.e., at least equal to) the first and second thresholds. In other words, the possibility of the capacity of the recording medium or the recordable number of frames being equal to the first threshold or the second threshold may result in Applicant's image recording apparatus or method setting either the first unit area size, the second unit area size or the third unit area size. Support for the amendments to the specification is found in Figures 2, 4 and 6, and in particular, decision steps S7, S11, S7' and S11' of the figures (where if the "above" condition is met, Applicant's method selects one unit size, and if the condition "above" is not met, meaning an "equal to or less than" condition is met, Applicant's method selects a different unit size), and in the original specification, at page 11, lines 13-24; page 12, lines 15-23; and page 16, lines 1-25.

Applicant would now like to discuss the amendments to the existing claims and the new claims which Applicant respectfully urge now more clearly and more specifically define features

of his invention which distinguish over the art of record.

With respect to Claim 1, Applicant amended this claim to delete the language which the Examiner found objectionable, but Applicant also recited in Claim 1 that the setter sets each of the unit areas to a first unit area size (please see step S9' shown in Figure 6, for example) when the capacity detected by the detector is either at least equal to (which means "equal to or greater than") or is greater than a first recording medium capacity size (the threshold "ABOVE 64 MBYTES?", for example, shown in step S7' in Figure 6). Applicant also amended Claim 1 to recite that the setter sets each of the unit areas to a second unit area size (please see either step S13' or step S15 in Figure 6, for example) when the capacity detected by the detector is either less than or at most equal to (which means "equal to or less than") the first recording medium capacity size (please see the "NO" direction when the capacity of the external memory is compared to the first threshold "ABOVE 64 MBYTES?" in step S7' in Figure 6, for example). Also, in Claim 1, as amended, Applicant defined the first unit area size (64 Kbytes) in step S9' in Figure 6, for example) as being greater than the second unit area size (either 32 Kbytes or 8 Kbytes, as shown in step S13' or step S15, respectively, in Figure 6, for example).

Thus, Claim 1 defines the structure which determines the unit area size to choose, and provides relative sizes to the first unit area size and the second unit area size without having to use the indefinite term "large", so as to comply with the requirements of the Examiner.

Applicant also submits for the Examiner's kind consideration new Claim 10, in dependent form. New Claim 10 defines the relative size of the first unit area as being about twice greater than the second unit area size (comparing 64 Kbytes in step S9' to 32 Kbytes in step S13' in Figure 6, for example). The structure set forth in new Claim 10 is supported by Figure 6 of the drawings.

New Claim 11 is also provided for the Examiner's kind consideration. Claim 11 more specifically defines the image recording apparatus in amended Claim 1 as including two

thresholds. As mentioned previously, the first threshold will lead to either a relatively large cluster size (64 Kbytes as shown in step S9' in Figure 6, for example) or a second unit area size if the capacity of the recording medium 38 is either less than or at most equal to (i.e., equal to or less than) the first recording medium capacity size (i.e., the first threshold shown in step S7' in Figure 6, for example). The second unit area size could be, for example, 32 Kbytes shown in step S13', or 8 Kbytes shown in step S15 of Figure 6, for example.

Furthermore, in new Claim 11, Applicant recited a second threshold, for example, the threshold "ABOVE 32 MBYTES?" shown in step S11' in Figure 6. Here, if the capacity detected by the detector is either less than or at most equal to the first recording medium capacity size (64 Mbytes, for example) and is either greater than or at least equal to a second recording medium capacity size ("ABOVE 32 MBYTES?", shown in step S11' of Figure 6, for example), then the setter sets each of the unit areas to the second unit area size (for example, 32 Kbytes, as shown in step S13' in Figure 6). However, as recited in Applicant's new Claim 11, the setter will set each of the unit areas to a third unit area size (8 Kbytes, as shown in step S15 in Figure 6, for example) when the capacity detected by the detector is either less than or at most equal to (that is, "equal to or less than") the second recording medium capacity size ("32 Mbytes" shown in step S11' in Figure 6, for example). Here, in Claim 11, Applicant defined the second unit area size ("32 Kbytes" shown in step S13' in Figure 6, for example) as being greater than the third unit area size ("8 Kbytes" shown in step S15 of Figure 6, for example). Applicant also defined in new Claim 11 the first recording medium capacity size ("64 Mbytes" in step S7' of Figure 6, for example) as being greater than the second recording medium capacity size ("32 Mbytes" in step S11' of Figure 6, for example). Here, again, Applicant thus defined the relative sizes of the clusters and the relative sizes of the thresholds without using the term "large" which was considered indefinite by the Examiner.

Applicant now respectfully refers the Examiner to new Claim 12. This claim depends from new Claim 11, and more specifically defines the first unit area size as being about twice

greater than the second unit area size, and further defines the second unit area size as being about four times greater than the third unit area size. As can be seen in Figure 6 of the drawings, the first unit area size ("64 Kbytes" shown in step S9' in Figure 6, for example) is twice the size as the second unit area size ("32 Kbytes" shown in step S13', for example) which, in turn, is four times greater than the third unit area size ("8 Kbytes" shown in step S15 of Figure 6, for example). Thus, new Claim 12 provides the relative dimensions to the various cluster sizes to which the memory is formatted based on the comparisons made by the apparatus of the subject application.

Turning now to independent method Claim 6, Applicant amended this claim in a manner similar to the way Applicant amended Claim 1.

New Claim 14 depends from amended Claim 6, where Applicant defines the first unit area size as being about twice greater than the second unit area size, in the same manner as Applicant recited in new Claim 10 which depends from amended Claim 1.

New Claim 15 further defines the setting step (c) in Claim 6 as including the sub-step of (c1) setting each of the unit areas to a second unit area size when the capacity detected in step (a) of Claim 6 is either less than or at most equal to (that is, "equal to or less than") the first recording medium capacity size and is either at least equal to or greater than a second recording medium capacity size, and wherein the image recording method further includes the step of (d) setting each of the unit areas to a third unit area size when the capacity detected in step (a) of Claim 6 is either less than or at most equal to the second recording medium capacity size. Thus, in new Claim 15, the image recording method defined by Claim 6 is now more specifically defined as making two comparisons, the first being with the first threshold value (the first recording medium capacity size, such as "ABOVE 64 MBYTES?" found in step S7' of Figure 6, for example) and a second threshold (the second recording medium capacity size, such as "ABOVE 32 MBYTES?" shown in step S11' of Figure 6, for example).

As can be seen, Claim 15 is similar in many respects to Applicant's new Claim 11 which depends from Claim 1. Here, in new Claim 15, Applicant also defined the second unit area size as being greater than the third unit area size, and the first recording medium capacity size as being greater than the second recording medium capacity size, as Applicant did in new apparatus Claim 11, and Applicant respectfully refers the Examiner to Figure 6 of the drawings, where the 64 Kbytes cluster size should be compared to the 32 Kbytes cluster size, and the 32 Kbytes cluster size should be compared to the 8 Kbytes cluster size, for example.

Additionally, Applicant submits herewith a new Claim 16 which depends from new Claim 15. In new Claim 16, the first unit area size is defined as being about twice greater than the second unit area size, and the second unit area size is defined as being about four times greater than the third unit area size. This is also shown by way of example in Figure 6 of the drawings, and as described previously. Claim 16 recites the relative sizes of the clusters in which the memory is formatted based on a comparison of the capacity of the recording medium 38 with the first threshold capacity and the second threshold capacity, as shown in Figure 6, for example.

Applicant also submits herewith new Claim 17, which depends from Claim 15, where Applicant defined the relative size of the first recording medium capacity size (the "64 Mbytes" in step S7' of Figure 6, for example) as being about twice greater than the second recording medium capacity size (the "32 Mbytes" threshold in step S11' of Figure 6, for example). New Claim 17 is very similar to new Claim 13, which depends from Applicant's new Claim 11.

New Claim 18 is also submitted herewith for the Examiner's kind consideration. New Claim 18 relates to the methodology shown in the flow charts of Figures 2 and 4, in particular. In new Claim 18, Applicant defined his image recording method as including the steps of (a) detecting the capacity of the recording medium, and (b) calculating a recordable number of frames of the recording medium on the basis of the capacity detected in step (a). Then, Applicant included three setting steps (c) – (e). The first setting step (c) is where each unit area is set to a

first unit area size when the recordable number of frames calculated in step (b) is either at least equal to or greater than a first threshold number of recordable frames. This is similar to steps S9 and S9' in Figures 2 and 4, respectively, where the recordable number of frames is greater than a first threshold number of recordable frames, such as the "ABOVE 100?" threshold shown in step S7 of Figures 2 and 4, for example.

The second setting step (d) is where the unit areas are set to a second unit area size, such as shown in step S13 or S13' in Figure 2 and Figure 4, respectively, for example, when the recordable number of frames calculated in step (b) is either less than or at most equal to (that is, "equal to or less than") the first threshold number of recordable frames (for example, the first threshold "100" shown in step S7 of Figures 2 and 4) and is either at least equal to or greater than a second threshold number of recordable frames (for example, the threshold "50" shown in step S11 of Figures 2 and 4, for example).

In step (e) of new Claim 18, each unit area is set to a third unit area size, such as shown in step S15 in Figures 2 and 4, for example, when the recordable number of frames calculated in step (b) is either less than or at most equal to (that is, "equal to or less than") the second threshold number of recordable frames (for example, the threshold "50" shown in step S11 of Figures 2 and 4).

Also recited in new Claim 18 are the relative sizes of the first unit area sizes and the threshold number of recordable frames. More specifically, the first unit area size is defined as being greater than the second unit area size, and the second unit area size is defined as being greater than the third unit area size, such as shown in steps S9 and S9', S13 and S13' and S15 in Figures 2 and 4, respectively, for example. Furthermore, the first threshold number of recordable frames is defined in new Claim 18 as being greater than the second threshold number of recordable frames, such as shown in steps S7 and S11 in Figures 2 and 4, for example.

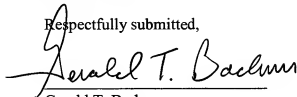
As was explained previously, none of the references of record, taken alone or in

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combination, teaches or suggests the detector and setter of amended Claims 1 and 6, previously presented Claims 2-5 and 7-9, and new Claims 10-14, or the detecting and setting steps of amended Claim 6 and new Claims 14-18. Such claims are thus respectfully urged to patentably distinguish over the references of record and are allowable.

In view of the foregoing amendments and remarks, entry of the amendments to Claims 1 and 6 and favorable reconsideration of these amended claims, favorable reconsideration of previously presented Claims 2-5 and 7-9, entry and favorable consideration of new Claims 10-18 and allowance of the application with Claims 1-18 are respectfully solicited.

Respectfully submitted,

A handwritten signature in black ink, reading "Gerald T. Bodner". The signature is written in a cursive style with a large initial "G".

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